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Medical student confidence to care for a dying patient and their family: a systematic review

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Abstract

Background: The General Medical Council expects medical graduates to care for dying patients with skill, clinical judgement and compassion. UK surveys continually demonstrate low confidence and increasing distress amongst junior doctors when providing care to the dying.

Aim: This systematic review aims to determine what has been evidenced within worldwide literature regarding medical undergraduate confidence to care for dying patients.

Design: A systematic electronic search was undertaken. Data extraction included measurements of baseline confidence, associated assessment tools, and details of applied educational interventions. Pre/post-intervention confidence comparisons were made. Factors influencing confidence levels were explored. The review was prospectively registered via PROSPERO (CRD42019119057).

Data sources: MEDLINE, CINAHL, EMBASE, ISI Web of Science, ERIC, PsychINFO, British Education Index and Cochrane Review databases were accessed, with no restrictions on publication year. Eligible studies included the terms 'medical student', 'confidence', and 'dying', alongside appropriate MeSH headings. Study quality was assessed using the Mixed Methods Appraisal Tool.

Results: Fifteen eligible studies were included, demonstrating a diversity of assessment tools. Student confidence was low in provision of symptom management, family support, and psycho-spiritual support to dying patients. Eight interventional studies demonstrated increased post-interventional confidence. Lack of undergraduate exposure to dying patients and lack of structure within undergraduate palliative care curricula were cited as factors responsible for low confidence.

Conclusion: This review clarifies the objective documentation of medical undergraduate confidence to care for the dying. Identifying where teaching fails to prepare graduates for realities in clinical practice will help inform future undergraduate palliative care curriculum planning.

KEY STATEMENTS

What is already known about the topic?

- Among all qualified doctors, Foundation Year 1 (FY1) trainees spend the most time with dying patients and their families
- Annual UK surveys continue to report low confidence and increasing distress amongst junior doctors when caring for dying patients
- The General Medical Council expect medical graduates to demonstrate skill and appropriate clinical judgement when caring for the dying

What this paper adds

- Low student confidence in caring for the dying has been documented within countries over the past 26 years
- Lack of clinical exposure to dying patients at undergraduate level, as well as poorly structured palliative care curricula are key factors contributing to observed low confidence
- A demonstrable increase in confidence has been observed in those studies documenting the implementation of a teaching or experiential intervention

Implications for practice, theory or policy.

- Medical schools need to better prepare our graduates to care for dying patients and their families with confidence, and without undue distress
- Level of exposure to dying patients currently offered within medical undergraduate curricula requires review, with critical appraisal on whether this is being offered at a level appropriate to achieve the expectations bestowed on graduates by governing bodies.
- Alternative ways of exposing students to dying patients needs to be explored

Keywords:

Students, medical., Terminal care., Dying., Confidence

Introduction

Across all training grades in the UK, Foundation Year 1 (FY1) doctors spend the most time with dying patients,¹ and realistically may find themselves looking after dying patients on their very first day.² In 2018 the General Medical Council (GMC) published updated guidelines for newly qualified doctors in its key document 'Outcomes for Graduates'. This document makes it clear that newly qualified doctors must be able to make appropriate clinical judgements when caring for patients at the end of life.³

In 2013 a survey of junior doctors demonstrated a lack of confidence and preparedness in general palliative care skills amongst FY1's, and of those surveyed almost two-thirds reported becoming distressed when caring for the dying.⁴ This may not be surprising given findings that many FY1's report having experienced little or no exposure to dying patients at undergraduate level.⁴ Contemporary research continues to demonstrate a lack of confidence amongst trainees in caring for dying patients who have lost consciousness.⁵

In 2013 a systematic review reported on the tools used to assess the effectiveness of undergraduate palliative care education, and found that there were no universally accepted validated questionnaires to measure this construct. The review demonstrated that there was much in the literature pertaining to changes in healthcare students' attitudes, skills and knowledge as a result of educational interventions, however it did not specifically seek to identify measurement of confidence in medical students in relation to the care of dying patients.⁶

Although some degree of overlap is acknowledged, the concepts of confidence and competence are recognised as separate entities within the literature. Whilst increased experience and clinical exposure correlates highly with students' confidence to perform certain tasks,⁷ this increased confidence does not necessarily result in increased competence as measured by formal assessment.⁸ Nonetheless, a perceived lack of confidence can have a negative impact on an individual's performance.⁶ What is clear is that the relationship between confidence and competence is complex,⁷ and whilst the literature suggests one can be confident to perform a task but not competent to do so, the reverse can also be argued.

Another important distinction to make is that which exists between the concepts of confidence and attitude. Again, whilst a degree of overlap may be present, the two concepts are often treated separately. Examples of this can be seen within undergraduate⁹⁻¹¹ and postgraduate^{12,13} literature. Furthermore, whilst confidence can be defined as the quality of being certain of one's abilities, attitude is defined as a feeling or opinion about something.¹⁴

In particular authors wished to look at whether students were confident at carrying out certain aspects of caring for a dying patient, from clinical assessment and prescribing skills, to communication with the patient and family.

By clarifying and defining such seemingly subjective terms, a degree of objectivity can be fostered which in turn will help authors clarify what it is they wish to investigate when formulating a research question. The aims of this systematic review are to identify literature pertaining to medical student confidence with respect to caring for a dying patient and their family, to critically appraise how confidence has been measured, and explore the impact of medical education interventions on confidence levels.

Method

Protocol and registration

This systematic review is reported following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines¹⁵ (Appendix 1) and has been registered with the International Prospective Register of Systematic Reviews (PROSPERO) (Registration number: CRD42019119057, registered on 10th January 2019) .

https://www.crd.york.ac.uk/PROSPERO/display_record.php?RecordID=119057

Search strategy

In order to identify studies that reported measures of medical student confidence with respect to looking after dying patients and their families, a systematic electronic search using MEDLINE, CINAHL, EMBASE, ISI Web of Science, ERIC, PsychINFO, British Education Index and Cochrane Review databases was conducted on 15th October 2019. Search terms used included permutations of the three main terms of medical student, confidence, and dying (table 1), alongside appropriate database MeSH headings.

Table 1: Search terms

Main terms	Searched terms
Medical student	'Medic* adj3 undergrad*' 'Medic* adj3 student*'
Confidence	'confiden*' 'self-assur*' 'self-belief' 'self-esteem' 'attitude*' 'belief*'

Dying	'end of life' 'dying' 'death' 'palliat*' 'terminal*'
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Permutations of the main terms were combined using the command 'OR'. The results for each main theme were then combined using the 'AND' command. This ensured that at least one permutation for each main theme was included in the title or abstract.

Eligibility criteria

Studies were included providing they met the eligibility criteria (Table 2). No restrictions were imposed in terms of publication year, country of origin, or study design as there was no rationale to do so. Peer reviewed articles were included alongside any other published works (abstracts, letters, editorials) provided they satisfied the eligibility criteria. Worldwide literature was included to facilitate a broader understanding of what is known about undergraduate confidence, allowing comparisons to be made with undergraduate curricula differing to that adopted in the UK.

Table 2: Eligibility criteria

<u>Inclusion Criteria</u> <u>Published works that included:</u> <ol style="list-style-type: none"> 1. Medical students as study subjects 2. Measurement of confidence (via any methodology) 3. Care of dying patients (and not just palliative or end of life care in general) <u>Exclusion Criteria</u> <ol style="list-style-type: none"> 1. Were not written in English language 2. Referred to 'end of life' without specific reference to dying patients 3. Assessed attitudes without specific reference to confidence 4. Did not include adult patients
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Study selection

All studies identified through database searches were exported into Excel for de-duplication. Remaining studies were tabulated and arranged alphabetically by author surname for more detailed review.

Due to the large number of studies identified, the primary reviewer (GW) excluded those that did not include all three inclusion criteria within the title and abstract alone. A second reviewer (RW) independently assessed 10% of these for eligibility (randomly selected studies).

Remaining eligible studies were retrieved using library services. Authors of unavailable studies were contacted to request an emailed copy, and were excluded if no reply was received. All successfully retrieved studies underwent independent full text review (GW and RW). Any disagreements regarding study eligibility were resolved by a third independent reviewer (CL).

A finalised list of all eligible studies appropriate for data extraction and quality assessment was created. Reference and citation searching of these was conducted to identify further eligible studies not found through database searching.

Data extraction

Data extraction was undertaken independently by two reviewers (GW and EY). Data pertaining to study design, sample characteristics, significance of confidence levels and potential factors influencing confidence were extracted and tabulated onto an Excel data sheet. Data were checked for consistency and any discrepancies were resolved through discussion.

Assessment of study quality

The methodological quality of each study was assessed by two independent reviewers (GW and EY) using the Mixed Methods Appraisal Tool (MMAT – version 2011).¹⁶ The MMAT tool was designed to address the challenges faced when critically appraising qualitative, quantitative and mixed methods studies as part of a systematic review,¹⁷ and as such was deemed an appropriate quality assessment tool to use for this systematic review given the methodological diversity found between the studies. Quality of studies can be scored as 0%, 25%, 50%, 75% or 100% depending on how many set criteria are met by the study being assessed. Example criteria include whether there is a clear description of participant randomisation, participant response rate, and whether steps were taken to minimise bias within the study. Lower and higher percentage scores correspond to poorer and greater methodological rigour of each study respectively.

To evaluate the extent to which both reviewers agreed on study quality (inter-rater variability), a Cohen's kappa (κ) score will be calculated for each eligible study. A score of $\kappa=1$ would imply perfect agreement between reviewers, whilst a score of $\kappa=0$ would imply no agreement.¹⁸

Outcome measures

Given the heterogeneity of data gathering tools used within the identified studies, a mixed-methods approach to data synthesis and reporting was adopted for this review. Data were extracted regarding details of the tools used to measure confidence along with their frequency of use amongst the studies.

For those studies reporting quantitative data, baseline mean confidence scores were extracted. Where studies reported an intervention had taken place, changes in the pre and post intervention confidence means were extracted and discussed.

For studies reporting qualitative data, descriptive analysis was undertaken to identify factors influencing confidence amongst medical students.

Results

Electronic database searches generated an initial 4301 studies. After de-duplication ($n=1582$), 2719 potentially relevant studies underwent title and abstract review. 2626 studies were excluded at this point leaving 93 for full text review. Reviewers (GW and RW) excluded 72 articles at this stage, but were not able to reach a consensus on 9 articles. These underwent additional independent review (CL) who agreed that 3 should be included with the remaining 6 excluded. In total 78 articles were excluded leaving a final 15 articles eligible for inclusion into the review. Of note there were 3 articles where corresponding authors needed to be contacted in order to clarify queries regarding published data. Whilst only one author replied, all three articles were excluded from the study, details of which are included in Appendix 1.¹⁵

Study characteristics

Study characteristics are detailed in Table 3 (Appendix 2).

The majority of studies ($n=4$) were from the United Kingdom¹⁹⁻²², with the remainder published in Germany ($n=3$),²³⁻²⁵ Australia, ($n=2$)^{26, 27} USA ($n=2$),^{28, 29} India ($n=1$),³⁰ The Netherlands ($n=1$),³¹ and New Zealand ($n=1$),³² with a collaborative study between the UK and USA ($n=1$).³³ Publication year ranged from 1993 to 2019.

Study quality ranged from 25% (n=4) to 100% (n=2) with an average score of 53% across all fifteen studies. The majority of studies (n=12) lacked information regarding details of student selection and reasons for student non-participation, therefore discussions about selection bias were not particularly rigorous.

A Cohen's kappa score (κ) of 0.63 was achieved, which suggests there has been substantial agreement between both reviewers with respect to measurement of study quality.¹⁸

Of those studies using mixed-methodology (n=4), the qualitative aspect was represented by way of thematic/content analysis of student feedback,^{20, 22, 27} or response to open-ended questions.²⁵ No study was solely qualitative in nature.

Nine studies included an interventional component, with pre and post-intervention measurements of confidence.^{19, 21, 22, 24-29} One quasi-randomised controlled trial (RCT) was identified.²⁸

Participant characteristics

Medical student sample size ranged from 6 to 449 participants. Eight studies included data pertaining to student characteristics, however there was a lack of consistency between studies in terms of how characteristics were reported. With studies reporting gender identity characteristics (n=7), all reported a greater proportion of female participants (range 50% – 74%).^{21, 22, 25, 28, 29, 31, 33} Only five studies recorded participant age, with the commonest age range being 20 to 30 years old.^{22, 25, 29, 31, 33}

Eight studies included 5th/final year students.^{19, 20, 23, 24, 26, 30, 31, 33} One study reported on students within years 3-6 inclusive,³² with the remaining six studies including either 2nd, 3rd, or 4th years.^{21, 22, 25, 27-29}

Ethnicity was only reported in studies from the US (n=3), with Caucasian students representing the majority of participants.^{28, 29, 33}

Measures of confidence

A variety of tools were used to measure student confidence. The majority of studies (n=8) used Likert style questionnaires, adopting 1-4 scale,^{23, 24, 29, 31} 1-5 scale,^{28, 32, 33} and 1-7 scale¹⁹ variations. Visual analogue scales (VAS) were adopted by four studies,^{20, 21, 26, 27} (of which three included the Self-Efficacy in Palliative Care scale). Two studies employed a 1-10 numerical rating scale,²⁵ and a simple yes/no questionnaire respectively.³⁰ The final study adopted a mixed methods approach, and whilst the quantitative aspect measured student attitudes, it was the thematic analysis of focus group data that specifically looked at confidence.²²

Across all studies data reported how confident students felt across a variety of domains within the care of a dying patient. These specific domains are discussed below, in descending order of prevalence.

Confidence in managing the physical symptoms of a dying patient

Ten studies reported some measure of confidence in managing the common symptoms experienced by dying patients, such as pain, nausea, constipation and anxiety.

Baseline scores within six studies demonstrated a general lack of confidence amongst medical students in the symptom management of the dying, with the majority of student scores falling into a 'not-confident' category, or with a mean result below 50% of the maximum achievable score. This was irrespective of which tool was used to gather the data, or whether it was an intervention study.^{19, 21, 23, 26-28}

One medium sized study (n=125) measuring baseline confidence between third and fifth year undergraduates with respect to 'patient management' (which included symptom control) found that whilst third years were generally quite anxious with this domain, fifth years demonstrated greater confidence in comparison (p=0.001, large effect size).²⁰ These results echo those of a larger study³² (sample size = 392) which compared confidence in symptom management of 3-6th year students. Using a Likert scale (0=low confidence, 5=high confidence) the study found that whilst confidence was low in year 3 (mean=0.6), it increased exponentially by year 6 (mean=2.9), without additional intervention and with a high degree of correlation.³²

Interestingly the Dutch study³¹ (n=213) found that the majority of students (60.5%) reported feeling confident in treating dying patients despite having an overall lack of confidence in providing palliative care in general. This shares some similarities with the UK/USA study which reported that UK students were more confident in managing pain in dying patients, including discussing the effects of medications, but less confident in discussing clinically assisted hydration (CAH) and nutrition (CAN) than their US counterparts.³³ This particular study gathered data using a 10-item Confidence in Treating Patients with Dementia in End-of-Life Care scale.³⁴ Whilst the study found that students with previous experience were more likely to feel confident discussing CAH and CAN (p≤0.01), those lacking experience were more confident in prescribing pain medications (p≤0.05). Effect size was not recorded.

Confidence in communicating and interacting with dying patients

Six studies measured student confidence and comfort in communicating and interacting with dying patients, and results echo those for baseline confidence in managing physical symptoms. Five of the studies demonstrated a baseline confidence of less than 50% amongst

students. One low quality study (MMAT score = 25%) demonstrated that a small majority of students felt confident in answering a patient's questions about potential suffering or pain,²⁶ however this appeared to be an outlying result as the same study also reported that students had low confidence when speaking with dying patients about prognosis and lack of beneficial treatment options. No supporting statistical analysis was undertaken.

Reporting within this domain were four intervention studies. Three of these studies demonstrated statistically significant improvements in confidence with communication when comparing pre and post-intervention scores ($p < 0.001$). These interventions comprised of palliative care lectures, problem based learning and bedside tutorials,²⁷ a 90-minute ward-based palliative care teaching module,²⁵ and an 8 and 13-day palliative care educational programme.²¹ A fourth interventional study also reported an increase in student confidence after attachment to a 'preceptor' (specialist palliative care nurse), however no statistical methods were applied to these results.²⁶

Two moderate quality (MMAT score = 50-75%) German studies (one interventional²⁴) measured student confidence in 'accompaniment' of a dying patient. Neither study defined accompaniment, however it was implied that this construct pertained to spending time with the patient, and both studies found students to have a baseline confidence of 17%²⁴ and 20%²³ in this domain. The interventional study demonstrated that 55% of students felt confident in accompanying a dying patient after attending a dedicated teaching course ($p < 0.0001$).²⁴

Supporting families of dying patients

Five studies explored student confidence with supporting the families of dying patients.^{22, 26, 28, 29, 33} One interventional study compared the effect of small group vs web-based interactive e-learning on student confidence, measured by a 24-item palliative and end-of-life self-efficacy scale.²⁸ Within the scale students were asked to rate their confidence with respect to conducting family conferences around end of life care discussions, dealing with angry family members, and managing family conflicts during end-of-life care (Scoring 1-4, not confident to very confident). Whilst pre-test scores were lower for the small group cohorts (mode = 1, not confident) compared to e-learning cohorts (mode = 2, a little confident), both groups scored higher (moderately confident) on post-test scale application, although this was not statistically significant.

A second moderate quality (MMAT score = 50%) interventional study found that 81% of students lacked confidence in teaching family members about end-of-life care at the bedside, and 74% lacked confidence to answer questions from family members about the dying process. After the implementation of a specific end-of-life curriculum, reported lack of

confidence decreased to a statistically significant 12% and 21% respectively. This was one of the larger sample-sized studies included within the review (n=222).²⁹

A high quality (MMAT score = 100%) quasi-randomised controlled trial (n = 109) comparing small group learning with interactive web-based learning found statistically significant improvements in students' self-efficacy to manage certain aspects of family care, namely conducting family conferences and managing family conflicts with respect to dying patients. This improvement was found in both groups irrespective of teaching modality (p<0.001).²⁸

Addressing spiritual aspects of death and dying

Three non-interventional studies documented student confidence in addressing the spiritual needs of the dying. One study highlights the potential importance of spirituality in the dying process of individual patients,²³ quoting that undergraduate training interventions have, thus far, failed to show evidence of improvement in student knowledge of such issues.^{23, 35} As a result the study justified focus on measuring student confidence in ability to address spiritual needs using a Likert-style questionnaire. Unsurprisingly 79% of students reported feeling non-confident in this area, and whilst no statistical analysis was performed, the study describes ability to address spirituality as being a major obstacle in undergraduate training.²³

The second, joint UK-USA study utilised the Confidence in Treating Patients with Dementia in End-of-Life Care scale.³⁴ The study compared all participating medical students to a combined group of nursing students, summarising that medical students were less confident in discussing spiritual aspects of death and dying than the nursing students, though statistical significance of this was unclear.³³

Whilst the third study described data pertaining to several aspects of confidence in caring for a dying patient, it was the integration of spiritual aspects of care that students appeared to find most challenging, with 77% of respondents (n=213) rating themselves as not-confident.

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Provision of psychological support

Amongst other questions, one interventional study asked students to rate their confidence in providing hope and encouragement to patients and their families in relation to death, dying, and terminal illness. Pre and post-intervention confidence increased by 15%, with a borderline confidence level reported in the pre-intervention questionnaire (55% confident, 45% not confident). However, this was a low quality study (MMAT score = 25%) which lacked statistical analysis.²⁶

The study comparing UK and USA medical and nursing students echoed the results seen regarding spirituality, with medical students being more likely to report low confidence in addressing psychosocial issues, although again no statistical analysis was offered. This study

draws upon literature which reports that confidence can be improved with increased exposure and observation of experienced colleagues in managing psychological aspects of a dying patient's care. ^{33, 36}

One study specifically asked students to rate their confidence in integrating spiritual aspects when treating and guiding terminally ill and dying patients. It found this to be the lowest scoring domain, with just 23% of students (n=213) placing themselves in the 'confident' category.³¹

Discussion

This is the first study to highlight what is known about medical student confidence in relation to caring for a dying patient, identify how this has been measured, and describe the impact of teaching interventions employed by the studies in this review.

We found that amongst the studies in this review eleven different tools were used to measure confidence. Given such heterogeneity it is difficult to establish which were better at measuring the constructs of confidence or self-efficacy. However, some studies documented where their tools had been pilot tested for acceptability (n=4), ^{23, 25, 28, 32} internal consistency ³¹, or validated as a psychometric test (n=4). ^{20, 21, 27, 29} Of note three studies utilise the SEPC questionnaire, ^{20, 21, 27} which is the only tool validated for use in medical undergraduates. As such it could be argued that this affords the SEPC a more robust foundation for its adoption in the measurement of student confidence in this setting.

All studies in this review found that medical students report low confidence with respect to various aspects of caring for dying patients and their families. The majority of these studies have involved some form of intervention with pre-post measures of confidence, and although statistical significance of results has not always been reported, it can be seen that the interventions have led to an increase in self-assessed confidence amongst student participants.

The main factors influencing observed low levels of confidence have been related to insufficiencies within undergraduate palliative care curricula at the time of publishing, ^{31, 32} lack of compulsory curricula pertaining to care of the dying or palliative care in general, ^{23, 26} or failure to integrate care of the dying patient early enough into medical undergraduate training. ²⁴

There is a lack of clarity regarding the current organisation and funding of palliative care training within UK medical schools, with evidence of limited leadership and course review – factors which may well be contributing to the failure of some schools to adequately educate medical undergraduates. ³⁷ The ability of graduating medical students to care for dying patients is considered a core competency, ³ and surveys demonstrate that the majority of

medical students regard learning how to care for a dying patient as being of high importance.³⁸ Despite this, junior doctor confidence in managing dying patients appears to be mainly developed from exposure in postgraduate environments,³⁹ strengthening the argument that teaching on the care of the dying patient could benefit from earlier integration into undergraduate curricula.

This does not appear to be unique to the UK. In 2000 a survey of US medical schools demonstrated that 100% of undergraduate courses incorporated education pertaining to death and dying,⁴⁰ with 27% of schools offering a separate 'death and dying' course by 2005.⁴¹ Despite this there remains no standardised undergraduate curricula to guide this teaching, which still takes the form of preclinical lectures.⁴⁰ Furthermore the number of hours dedicated to such teaching has remained unchanged since 2000.⁴¹ The importance of experiential learning in providing students with opportunities to put their skills into practice is emphasised, particularly in the context of the 'millennial medical student', who is typically seen to be practical in nature.⁴² Over the 23-year publication period, the majority of studies conclude that continued lack of undergraduate experiential learning remains one of the key factors associated with the persistent reporting of under-confidence of undergraduates to care for the dying.

With respect to spirituality, the GMC and World Health Organisation (WHO) recognise the importance spirituality has in promoting health and managing disease.⁴³ The concept of spirituality does not have to be a religious one, as many without religious beliefs will describe having an important spiritual component to their lives.⁴⁴ It can be described as a deep-seated sense of belonging, meaning and purpose in life.⁴⁵ Despite the GMC requirement of UK medical schools to incorporate teaching on spirituality at an undergraduate level,³ current teaching practices remain unclear with a lack of standardised approaches.⁴³ In contrast, the percentage of US medical schools offering teaching on spirituality rose from 13% in 1994 to 75% by 2006 due to the recognition of its importance on patient wellbeing.⁴⁵ Just two studies^{23, 33} (German, and joint US/UK studies) in this review specifically comment on confidence in addressing the spirituality of dying patients. One concluded that increased exposure to and observation of professionals addressing spirituality will help improve undergraduate confidence.³³ The second study did not draw any firm conclusions.

Limitations

Given the low number of studies meeting the inclusion criteria, and heterogeneity of interventions it is difficult to ascertain which interventions appear most successful in improving student confidence. This is made all the more challenging given that statistical analysis of results was only undertaken in approximately 50% of studies, with the remaining studies either reporting that analysis was not likely to be meaningful due to low sample size, or simply not mentioned at all.

Studies included within this review span seven predominantly western countries. The geographical location of these studies is likely to have been influenced by the fact that in order to be deemed eligible, studies had to be reported in English. It is not inconceivable that relevant and important studies from other countries may have been excluded in this process, and as such this will limit generalisability of review findings to non-western countries. Inclusion (and translation) of research from non-western countries may afford opportunities to identify cultural differences with respect to talking openly about death and dying, and how this informs undergraduate curricula on care of the dying patient.

All studies reported some measure of baseline confidence. However, it was found that in the majority of studies, measurement of medical student confidence in caring for a dying patient and their family only formed a part of the overall outcome measures for each study. As such measurements were made by asking of single (or very few) questions within a larger questionnaire, or from combining the results of questions grouped together. There was heterogeneity with regards to those aspects of patient and family care against which confidence was being measured, with the majority focussing on physical symptomology (n=11), and communication skills (n=9).

A further important consideration relates to the nomenclature adopted between the studies with respect to the main concepts being reviewed. The use of broad search terms was necessary to ensure studies were not inappropriately excluded, with particular reference to the concepts of confidence and dying. It is clear that certain terms are subject to multiple interpretations, with 'end of life', 'actively dying', and 'terminally ill' being used interchangeably but with inconsistent definitions.⁴⁶ The same is true for the concepts of confidence, self-efficacy, and competence. Bandura ⁴⁷ defines perceived self-efficacy as representing the confidence that one can use the skills necessary to cope with stress and meet situational demands. However, Bandura also states that perceived self-efficacy can be characterised as being competence-based, ⁴⁷ a definition that is shared by other published authors. ⁴⁸

Such challenges within definitions can be seen outside of the medical literature. For example, one study offers clearer definitions between the two concepts, but argues that observed increases in confidence may arise from increased competence in the first place.⁴⁹ Further afield research highlights interweaved relationships between confidence and competence, recognising that as observers we feel uncomfortable if we perceive experts (be that a physician or car mechanic) to have low confidence – which may then cause us to question their competence.

A final limitation is in relation to the use of the MMAT. Reviewing authors (EY and GW) experienced some difficulties interpreting the tool guidelines when applying it to judge the eligible studies in this review. Both reviewers found some of the criteria overly complicated and difficult to follow, and on occasion poorly applicable to some of the more complex studies. This may in part explain why inter-rater reliability achieved a Cohen's kappa of

$\kappa=0.63$, and whilst this suggests substantial agreement was reached, it also evidences a level of disagreement between both reviewers. Since the commencement of this systematic review it appears the content validity of the MMAT has been subject to in-depth review and subsequent revision based on findings that many other users have faced similar challenges in the application of this tool, with poorer level of agreement seen when applying it to qualitative and non-randomised studies.⁵⁰

What this review adds

This review has demonstrated a two-decade history of low confidence amongst medical undergraduates with respect to caring for a dying patient and their families, across a variety of countries. Measurements of confidence have been undertaken using a heterogeneity of validated and un-validated tools.

In the past decade increasing attention has been focused on the way medical students are taught to care for dying patients and their families, with governing body guidelines making clear the expectations of graduates in the care of one of the most vulnerable groups of patients. Despite this, junior doctors continue to report experiencing distress and a lack of confidence when caring for such patients in 21st century medicine.

As educators we must address the issues raised in the feedback we receive. It is clear that medical schools do not follow a standardised approach when it comes to teaching care of the dying, and where interventions are put in place it is unclear which ones achieve the best outcomes. This review has demonstrated that a lack of clinical exposure to dying patients and poorly structured palliative care curricula are repeatedly cited as being the main drivers perpetuating this ongoing feedback. It is hoped the results of this review will help support and guide critical appraisal of current teaching practices in learning to care for dying patients and their families.

In time this will facilitate the development of junior doctors with greater confidence to care for dying patients, paving the way for further study to demonstrate improved patient outcomes.

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Figure legends:

Appendix 1: PRISMA Flowchart ¹⁵

Appendix 2: Table 3 Study characteristics

Supplementary materials:

Database search results and details of all papers included within the review can be accessed by contacting the primary author, and can be made available upon request.

Contributorship Statement:

Dr Geoffrey Wells (GW) is the primary author of this work. He has contributed to all aspects of this review, carrying out the initial review, screening all articles for eligibility, full text review of eligible articles, data extraction, quality assessment, assimilation of results and detailed analysis and discussion of these results. GW has developed this report and has undertaken all aspects of editing for publication. GW takes responsibility for the overall content as guarantor.

Dr Elaney Youssef (EY) assisted with detailed data extraction of all eligible articles. EY undertook detailed quality assessment as a second reviewer using the MMAT which facilitated the measurement of inter-rater reliability. EY has also been involved in the editing process, and has made recommended changes to the final manuscript.

Dr Rebecca Winter (RW) undertook initial screening of a random 10% of articles to ensure articles met eligibility criteria, and was involved in the full text review of all studies deemed eligible. RW has also reviewed the final manuscript for any necessary editorial changes.

Professor Juliet Wright (JW) has assisted in the development of this manuscript by providing research expertise and support throughout its development. Regular reviews of the manuscript at supervision meetings to recommend edits. JW has reviewed the final manuscript and made changes prior to publication

Professor Carrie Llewellyn (CL) has been the main reviewer for this review, providing her expertise in the field of mixed-methods research, and systematic reviews. CL acted as a third independent reviewer for those articles for which GW and RW could not find a consensus with respect to eligibility. CL has helped with the formation of Cohen's Kappa score, and has made edits to the final document for publication.